TITLE: Dehydroepiandrosterone for the Treatment of Infertility: Clinical Effectiveness and Safety

DATE: 25 February 2015

RESEARCH QUESTION

What is the clinical effectiveness and safety of dehydroepiandrosterone for the treatment of infertility?

KEY FINDINGS

Two systematic reviews, three randomized controlled trials, and 12 non-randomized studies were identified regarding dehydroepiandrosterone for the treatment of infertility.

METHODS

A limited literature search was conducted on key resources including PubMed, The Cochrane Library (2015, Issue 2), University of York Centre for Reviews and Dissemination (CRD) databases, Canadian and major international health technology agencies, as well as a focused Internet search. No filters were applied to limit the retrieval by study type. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2010 and February 12, 2015. Internet links were provided, where available.

The summary of findings was prepared from the abstracts of the relevant information. Please note that data contained in abstracts may not always be an accurate reflection of the data contained within the full article.

SELECTION CRITERIA

One reviewer screened citations and selected studies based on the inclusion criteria presented in Table 1.
Table 1: Selection Criteria

<table>
<thead>
<tr>
<th>Population</th>
<th>Women of reproductive age undergoing fertility treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intervention</td>
<td>Dehydroepiandrosterone</td>
</tr>
<tr>
<td>Comparator</td>
<td>Any comparator</td>
</tr>
<tr>
<td></td>
<td>No comparator</td>
</tr>
<tr>
<td>Outcomes</td>
<td>Clinical benefit (e.g., conception success rates)</td>
</tr>
<tr>
<td></td>
<td>Clinical harm</td>
</tr>
<tr>
<td>Study Designs</td>
<td>Health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies</td>
</tr>
</tbody>
</table>

RESULTS

Rapid Response reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first. These are followed by randomized controlled trials and non-randomized studies.

Two systematic reviews, three randomized controlled trials, and 12 non-randomized studies were identified regarding dehydroepiandrosterone for the treatment of infertility. No relevant health technology assessments were identified.

Additional references of potential interest are provided in the appendix.

OVERALL SUMMARY OF FINDINGS

Two systematic reviews and meta-analyses\(^1,2\) were identified regarding dehydroepiandrosterone (DHEA) for the treatment of infertility. There were no significant differences reported for pregnancy rates,\(^1,2\) miscarriage rates,\(^1\) and live birth rates\(^2\) in women treated with DHEA for infertility compared with women not treated with DHEA. The authors of both studies stated that there was insufficient evidence to support the role of DHEA in the treatment of infertility.\(^1,2\)

Three randomized controlled trials\(^3-5\) were identified. Two studies\(^3,5\) reported higher live birth rates in DHEA-treated women compared with controls. One study\(^3\) reported that women in the control group had higher miscarriage rates when compared with women treated with DHEA. However, another study\(^4\) did not report a significant difference in pregnancy rates for DHEA-treated women compared with their control group. DHEA-treated women did experience a slightly higher fertilization rate and reported more oocytes retrieved when compared with women in their control group.\(^4\)

Reported findings from the non-randomized studies varied; however, the majority of the studies\(^7,9,10,11,12,14\) reported an improvement in clinical pregnancy rates following DHEA treatment. Table 2 summarizes the findings reported in the 12 non-randomized studies.

Table 2: Summary of Included Non-Randomized Studies

<table>
<thead>
<tr>
<th>Author, Year</th>
<th>Patient Population</th>
<th>Reported Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vlahos, 2015(^6)</td>
<td>DHEA treatment, N = 48 Control group, N = 113</td>
<td>• No statistically significant difference in pregnancy rates or live birth rates between the DHEA and control groups.</td>
</tr>
<tr>
<td>Jirge, 2014(^7)</td>
<td>N = 31</td>
<td>• A significant increase in pregnancy rates and live birth rates after DHEA supplementation.</td>
</tr>
<tr>
<td>Author, Year</td>
<td>Patient Population</td>
<td>Reported Findings</td>
</tr>
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<tr>
<td>Poli, 2014⁴</td>
<td>N = 29</td>
<td>• Fertilization rate and number of pregnancies increased (not significantly) after DHEA supplementation.</td>
</tr>
<tr>
<td>Nemati, 2014⁵</td>
<td>N = 200</td>
<td>• Pregnancy rate significantly increased after DHEA treatment.</td>
</tr>
<tr>
<td>Xu, 2014¹⁰</td>
<td>DHEA treatment, N = 189 Control group, N = 197</td>
<td>• DHEA treatment experienced patients significantly higher pregnancy rates compared with controls.</td>
</tr>
</tbody>
</table>
| Zangmo, 2014¹¹| N = 50             | • DHEA treatment resulted in higher number of embryos.  
• Clinical pregnancy rate was 26.7%. |
| Fusi, 2013¹²  | Women under 40, N = 39 Women 40 and over, N = 38 Control group, N = 24 | • After DHEA treatment the pregnancy rate significantly increased, including the pregnancy rate for older women. |
| Gleicher, 2013¹³| N = 213            | • Efficacy of DHEA treatment varied upon patient age and genotype  
• 47 IVF cycles resulted in pregnancy after DHEA treatment. |
| Singh, 2013¹⁴ | N = 30             | • Pregnancy rate was 16.7% with DHEA treatment.  
• DHEA improved the ovarian response in women with previously failed IVF cycles. |
| Artini, 2012¹⁵ | N = 24 (N f not specified for DHEA and control groups) | • Pregnancy rates higher (not significantly) in treatment group compared with control group. |
| Weissman, 2011¹⁶ | N = 15             | • Number of fertilized oocytes was similar in before and after DHEA treatment groups. |
| Gleicher, 2010¹⁷ | N = 120           | • Pregnancy rate was 23.64% after DHEA treatment. |

*DHEA = dehydroepiandrosterone; IVF = in vitro fertilization.*
REFERENCES SUMMARIZED

Health Technology Assessments
No literature identified.

Systematic Reviews and Meta-analyses


Randomized Controlled Trials


Non-Randomized Studies


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APPENDIX – FURTHER INFORMATION:

Systematic Reviews and Meta-Analyses – DHEA Not Specified


Randomized Controlled Trials – Alternate Outcomes


Guidelines and Recommendations